MIEIBC
MICHIGAN
ENERGY INNOVATION
BUSINESS COUNCIL

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Testimony to House Energy Committee
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Thank you for the chance to speak with you today. My name is Liesl Clark and I'm president of the MI Energy Innovation Business Council. The gentlemen joining me are members of EIBC, Scott Viciana of Ventower Industries is a board member and next to him is Scott Hawken of Apex Clean Energy.

I'd like to take this opportunity to talk to the committee about Michigan EIBC and the full range of work in the advanced energy industry that we do. Given the discussion here today, we will then narrow down to wind specifically and I'll invite Scott and Scott to speak about their businesses and the work that they do in Michigan.

Michigan EIBC serves its members by strengthening Michigan's network of advanced energy businesses, engaging the public and policymakers around policy and regulatory initiatives, and creating partnerships to expand business opportunities.

This industry has grown in leaps and bounds over the last decade and that growth has accelerated in the past year. **Solar jobs are growing 12 times faster** than national job growth overall, and according to the U.S. Department of Energy, there are now twice as many people working in the solar industry as working in coal and natural gas power plants. The job of wind industry technician is now the fastest growing job in the nation, and the **wind industry hires veterans at a rate 50% higher** than the national average. And there are **2.2 million people working in energy efficiency nationally**. If supporting jobs and jobs due to energy savings are included, that total is at least three times as large. Here in Michigan, clean energy jobs now total 87,000. Put simply, when companies save money on energy, they tend to hire more people.

Michigan EIBC is growing as well, representing nearly 100 member companies, working to ensure the business voice of advanced energy is heard loud and clear. As Michigan's only multi-sector advanced energy business association, Michigan EIBC represents companies across the full range of advanced energy industries, including advanced materials, batteries and energy storage, combined heat-and-power, biomass and biofuels, demand response, electric vehicles

and mobility, energy efficiency, lighting, performance contracting, smart grid and grid modernization, solar, and wind.

With revenues reaching $200 billion in the United States, the advanced energy industry is now equal to domestic pharmaceutical manufacturing, nearly double beer sales, and approaching wholesale consumer electronics.

Like the rest of the nation, and indeed, the world, Michigan's energy profile is changing. These changes are coming from the evolving market, improvements in technology, and the framework of policy. Electricity is a core component of our businesses, homes, and way of life, and the sources we get energy from all have costs and benefits. The modern electric grid has served us well, but like other infrastructure in the country, it needs upgrades and can be improved with new, advanced technologies.

For example, we know that efforts to reduce energy waste are the most cost-effective resource we have, saving **more than $4 for every dollar invested in energy upgrades**. In addition, Michigan's utilities have been leaders in the deployment of advanced metering infrastructure/ smart meters. This has many benefits, from accelerating opportunities to reduce energy waste to reducing the length of outages from storms and other causes, to better integrating distributed energy resources like solar and batteries.

In addition, smart meters unlock new business models and market opportunities such as Demand Response, which is basically using this technology to pay you for flexibility in running things in your home like your air conditioner or dryer. For example, do you know when your refrigerator runs the defrost cycle on your freezer? Do you care? Refrigerators on average consume around 100 – 300 watts of energy, however the 10 to 15 minute defrost cycle can consume 10 times that amount. If you don't care when it happens, shifting everyone's freezer to defrost at night when energy is inexpensive can save you money and save all of us by not requiring generation of more expensive daytime energy.

On the generation side, we're seeing a significant change in where we get our energy, transitioning from coal to natural gas and renewables. In addition, you may also have heard of the recent announcement of the Palisades Nuclear plant closure. Consumers Energy expects to make up for that loss of capacity with a mixture of energy waste reduction, demand response, natural gas, and additional wind generation.

Fossil fuels need to be imported to Michigan and we spend around **$22 Bill per year importing coal and natural gas**. We don't know what that will cost in the future, and that number does not take into account the impacts on our air and water.

Natural gas plants can be started and stopped quickly and represent a good partner for renewables and other generation. Like other fossil fuels, however, history has shown a high

degree of variability in natural gas prices, increasing the importance of diversity in our generation mix. In addition, many states are transitioning their power plants from coal to gas, while there are also projects underway to export natural gas to other countries. This creates uncertainty about future prices but we know that demand usually forces costs up.

Of course, the other big transition has been the growth of renewables, reflecting a rapid decline in the cost of wind and solar, to the point that wind is now the cheapest new generation resource available in Michigan.

Since 2008, **the price of wind has fallen 61%.** The two most recent wind contracts approved by the Michigan Public Service Commission were at or below $45/MWh, and now wind is cheaper than new natural gas and coal. Natural gas is $66-70 per MWH and coal is $100 and over per MWH.

Even without the federal production tax credit, wind is approximately $65-70/MWH making it about equal to natural gas, and cheaper than coal or nuclear.

It's important to consider how government subsidies fit into this picture. And I'd like to take a moment to clear up a commonly-heard misconception: There are no state subsidies in Michigan for renewable energy generation. I'm going to say that one more time: The state of Michigan does not subsidize renewable energy.

At the federal level, there are tax benefits for all energy sources and the Production Tax Credit gives wind around 2 cents per kwh advantage. Under the terms of a bipartisan budget agreement in 2015, however, the federal PTC is already being phased out, and will be completely eliminated in 2020.

The bottom line is that **adding the lowest cost generation source makes a lot of sense**.

This is not just a Michigan phenomenon. Across the nation, wind has put downward pressure on costs because wind is a fuel-less energy source. Importantly, improvements in forecasting are better allowing us to fit them into the grid. Many states, including Texas, Oklahoma, Kansas, Minnesota, and others, are incorporating up to 20% wind and higher.

The biggest advantage of renewable energy is that it **does not require fuel**. Risk decreases significantly when you don't have to worry about fuel prices going up in the future.

In addition to adding the lowest-cost generation source to help keep rates in check, wind offers a number of additional benefits to Michigan communities.

Wind is best sited in rural areas who have the right resource – good wind – and communities who are interested in building some security for the future.

Property tax payments from wind development are used for road improvements, schools, health care, public safety and infrastructure projects. This results in tens of millions of dollars directed to rural counties and communities that need them. Indeed, the **only** counties not cutting services during the recent recession were those with wind income coming in – so even though it's sometimes hard for residents to see the influx of money from wind projects, it's important to recognize the differences between neighboring counties with and without wind developments.

I can't reinforce enough this point that the local governments who saw income flow from wind taxes weathered the recession and financial challenges better than those without wind.

We've also seen that **wind developments benefit property values and the tax base**. From 2011 to 2015, across all Michigan counties, total taxable value only increased by 1.28 percent. However, in the four counties hosting the largest number of windfarms, total taxable values increased by 28 percent.

Don't take my word for it, here is a map from Bridge Magazine on economic recovery in Michigan that was not conceived to have anything to do with energy. It's clear from this map of property values that wind developments in Michigan are having a positive impact. Wind farms create another revenue stream which helps keep the next generation of farmers on the land.

Research done at the University of Michigan shows that farmers who have turbines on their land invest twice as much money in their farms and are more likely to have a succession plan in place to keep their farm going.

Things have really changed since we started developing wind in Michigan over 15 years ago. Many lessons have been learned about wind development in Michigan, as well as from other parts of the country like Minnesota, Iowa, and Oklahoma where wind development has been an important economic driver for rural communities.

Planning and community engagement are key components in any wind development.

In Michigan, we have had varying experiences. Some windfarms have been done very well and some were more challenging. Since early wind farm development in Michigan before even 2008, there has been a substantial amount of refinement to the effort, and developers and communities have learned A LOT when it comes to best practices.

One of the parts of the state where development has gone well is Gratiot County. Gratiot set out in 2008 and started by engaging early among community members to talk about what they wanted for their county.

The significant difference in the Gratiot story is the buy-in that was created by those early discussions where they decided they wanted to take advantage of the economic opportunity and that wind fit into their rural, agriculture landscape. Then they adopted county wide zoning and were able to see the biggest benefit. Some of the people involved in talking about the wind farms there say that it takes 50 cups of coffee for each MW.

It's critical that we do development right, and that communities decide for themselves whether to take advantage of the many benefits wind has to offer.

Two final points.

A **diversified power system ensures reliability, you don't have to choose between renewable and reliable**. In fact, many businesses are asking for more renewables.

71 of the Fortune 100 companies have renewable energy goals. To avoid changing fuel prices, to decrease committed costs, and to improve their sustainability, big companies like GM, Steelcase, and Walmart are making commitments to purchase a large percentage of their electricity from renewable sources. In Michigan, we have a group called the Corporate Purchasers Roundtable who see this as a critical move for their business. The chart shows companies who have already made these purchases from Facebook to Microsoft to Google to Amazon to Dow Chemical to General Motors.

The Corporate Purchasers Roundtable talks to the automakers often because technology **convergence between energy and transportation** is accelerating. The automakers have identified that they are often competing with technology companies because of the way the advanced transportation market is changing and those tech companies – as you can see here – are making big investments in renewables which drives the mobility companies to do the same.

GM told a gathering in November that they SAVED $5 million in 2015 from purchasing renewables. And as part of their $5 billion investment outside Grand Rapids – a data center called Switch asked for two things: that Michigan be competitive in terms of business tax burden, and that they be able to power 100% of their energy needs with renewable energy.

We're also seeing more interest from smaller businesses. Sometimes this comes through them purchasing offsets to their energy use. Sometimes this comes from them building their own energy source after doing energy waste reduction – this is usually solar. Michigan wineries and breweries are both making big investments in solar - - companies that have names you know like Black Star Farms, Chateau Chantal, Brewery Vivant, and Dark Horse Brewery.

On top of the businesses, cities are also coming together to request more renewables. In April, the city of Chicago announced that it will be 100% renewable for all city buildings by 2025. Michigan cities are leaders in this regard – the city of Grand Rapids has long been out in front

on sustainability issues with a 100 % goal by 2025 and Traverse City plans to get there by 2020. The interest in renewable energy is not limited to only large population centers – Northport, Michigan announced their 100% renewable goal two years ago when they were one of only 20 communities across the country.

So not only is wind energy the most affordable form of energy in Michigan, we're also seeing a business and local government push toward more renewable energy due in a large part to declining costs. When you hear people say that renewable energy can't meet our energy needs, it's important to ask what they know that leading companies like Google and General Motors, and cities like Chicago, Grand Rapids, and Traverse City don't.

Finally, as noted earlier, a number of states have successfully integrated significant amounts of wind onto the grid without any negative impact on reliability.

As I mentioned before, the grid plays an important role in balancing the resource so electricity is there when you turn on your lights or when a manufacturer fires up their machinery. We are also fortunate in Michigan to have one of the biggest balancing mechanisms in the form of a huge battery in Ludington, MI – the Ludington Pumped Storage Facility.

It's important to remember that we need this grid balancing for all forms of energy, not just wind or solar. Even baseload plants don't run 24/7/365, are regularly taken offline for maintenance – and sometimes in emergency situations. But other resources on the grid – including wind, as well as a growing toolkit of demand-side resource, help to ensure overall grid balance.

In 2012, Palisades was down 5 times that year which launched a special inspection by the Nuclear Regulatory Commission. Last year, DTE's St. Clair coal plant unexpectedly caught fire, knocking out nearly 2 GW of generation which won't be fully back online until July. And in March the Fermi 2 nuclear plant was shut down for more than a month for a refueling outage. I don't say this to disparage because EIBC supports a diverse energy portfolio for Michigan but the point I'm making is that in each of these cases we lost massive amounts of generation – sometimes scheduled, sometimes in emergency situations – without any impact on reliability. We don't have an entire nuclear plant sitting around to back up Palisades or Fermi when they are taken offline, and it's wrong to assert, as some have, that wind needs something similar for every lull in the breeze. That's just not how our 21st Century grid works. All resources balance and grid operators have important jobs to use innovative technologies, and wind has repeatedly been part of the solution when other generation sources go down.

We need a diversified power system to ensure that we don't have to choose between renewable and reliable.

Thank you for your attention and for the privilege of speaking to you today. I'd like to invite Scott Hawken of APEX Clean Energy to speak next and after Scott Viciana of Ventower is done the three of us would be happy to answer any questions.